

Serial No. 10/811,624

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This reply is responsive to the Office Action dated September 21, 2004.

Claims 1-7 were pending in the application. No claims were allowed.

Accordingly, Claims 1-7 are currently pending.

Claim Rejections Under 35 USC § 102(e)

Claims 1-6 were rejected as being anticipated by U.S. Patent No. 6,618,414 issued to Wasserbauer et al.

Reconsideration of claims 1-6 is respectfully solicited in light of the following remarks.

The Examiner stated the following as a basis for the rejection:

Wasserbauer et al discloses a method of making VCSEL device by forming an annular ohmic intracavity contact pad "118" adjacent to the optical cavity "116"; forming mesa in plurality of VCSEL layers in accordance annular intracavity contact pad to expose the oxide aperture layer, oxidizing the oxide aperture layer to form oxide aperture "140" that is self-aligned with annular ohmic intracavity contact pad; forming upper mirror adjacent to said annular intracavity contact pad. Wasserbauer et al. teaches forming active region comprising one or more active layers and forming delta doped upper cladding layer "130" and spacer layer "160" adjacent to said optical cavity.

Although Wasserbauer et al. discloses a similar structure, i.e. a mesa with a contact on the top, it does not describe in any way shape or form that the mesa is etched using the contact as the etch mask. Specifically on, Wasserbauer et al. discloses that after the contact is formed,

the remaining exposed portion of the contact layer 152 may be selectively etched down to the etch stop layer 150 using, for example, a citric acid acid-based etchant if the etch stop layer 150 is AlAs. The underlying etch stop layer 150 may then be selectively removed down to the uppermost surface of the delta-doped upper-cladding layer 130 with a suitable etchant, such as, for example, a solution of hydrochloric acid, with ten percent water in the case of an AlAs etch stop layer.

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(See '414 patent, col. 7, lines 34-44). Wasserbauer et al., however, does not disclose if an etch mask is used or that the contact is suitable to be used an etch mask. At most, Wasserbauer et al. suggests suitable etchants for use in constructing VCSELs.

Although both applications relate generally to VCSELs, they have entirely different goals. The inventive concept patented in Wasserbauer et al. is on locating the dielectric spacer layer within the VCSEL at or near a standing null in the optical wave pattern to reduce loss and scattering of the emitted laser light. Whereas this application is concerned with using an ohmic contact as an etch mask to define the mesa sidewalls of a VCSEL.

The subject matter in this application was developed to overcome problems in constructing VCSELs as disclosed in Wasserbauer et al. Traditionally, a separate etch mask was used to mask the mesa before etching. Problems with aligning the separate etch mask during etching, however, caused the oxide aperture to be misaligned with the contact. The solution developed in this application, i.e. using the contact itself as an etch mask eradicated the alignment problems experienced in attempting to construct a VCSEL as specified in Wasserbauer et al.

Reconsideration of claims 1-6 is respectfully solicited in light of the above.

Claim Rejections Under 35 USC § 102(a)

Claims 1-7 were rejected as being anticipated by Naone et al. in U.S. Patent Publication No. 2002/0150135.

The Applicant presents the following attached Declarations under 37 CFR 1.132 to overcome the rejection. Briefly, the declarations assert that Leo Chirovsky and Ryan Naone were the originators of the subject matter relating to the concept of using a self-aligning ohmic contact as an etch mask to define a mesa in a VCSEL that was disclosed, but not claimed, in U.S. Patent Publication 2002/0150135 and is the claimed subject matter of this application. Both inventors were named applicants on each of these disclosures.

Reconsideration of claims 1-7 is respectfully solicited in light of the above.

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Double Patenting

Claims 1-7 were rejected under the judicially created doctrine of obviousness-type double patenting over claims 1-10 of U.S. Patent No. 6,750,071.

The Applicant presents the attached terminal disclaimer in accordance with 37 CFR 1.321(c) to overcome the rejection.

Reconsideration of claims 1-7 is respectfully solicited in light of the above.

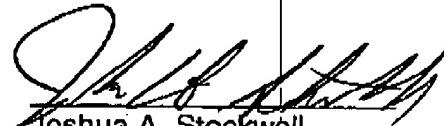
In light of the above-noted remarks, claims 1-7 are believed to define patentable subject matter over the prior art references of record.

Accordingly, claims 1-7 are believed to be in condition for allowance and the application ready for issue.

Corresponding action is respectfully solicited.

PTO is authorized to charge any additional fees incurred as a result of the filing hereof or credit any overpayment to our account #02-0900.

Respectfully submitted,



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